

What is claimed is;

1. An autofocus method comprising the steps of
taking an image of a subject by a solid image taking
device including a first image taking element having a
5 plurality of pixels and a second image taking element having
a plurality of pixels smaller than those of the first image
taking element,

calculating a first evaluation on contrast obtained by
integrating high-frequency components of a first image signal
10 representing an image of the subject taken by the first image
taking element,

calculating a second evaluation on contrast obtained by
integrating high-frequency components of a second image signal
representing an image of the subject taken by the second image
15 taking element, and

adjusting the focus on the basis of the first and second
evaluations on contrast so that the subject is imaged on the
solid image taking device.

2. An autofocus system comprising
20 a solid image taking device including a first image
taking element having a plurality of pixels and a second image
taking element having a plurality of pixels smaller than those
of the first image taking element,

a taking optical system for focusing light from a subject
25 on the solid image taking device,

a first evaluation calculating means which calculates

a first evaluation on contrast obtained by integrating high-frequency components of a first image signal representing an image of the subject taken by the first image taking element,

a second evaluation calculating means which calculates
5 a second evaluation on contrast obtained by integrating high-frequency components of a second image signal representing an image of the subject taken by the second image taking element, and

a focusing means which adjusts the focus of the taking
10 optical system on the solid image taking device on the basis of the first and second evaluations on contrast.

3. An autofocus system as defined in Claim 2 further comprising a signal mixing means which generates a third image signal by mixing the first and second image signals, and a third
15 evaluation calculating means which calculates a third evaluation on contrast obtained by integrating high-frequency components of the third image signal in which the focusing means is provided with a function of adjusting the focus of the taking optical system on the basis of the third evaluation on contrast.

20 4. An autofocus system as defined in Claim 3 further comprising a brightness measuring means which measures the brightness of the third image signal in which the focusing means is arranged to adjust the focus of the taking optical system on the basis of the third evaluation on contrast when the
25 brightness measured by the brightness measuring means is lower than a threshold value.

5. An autofocus system as defined in Claim 2 in which the focusing means adjusts the focus on the basis of the second evaluation on contrast when the position of the taking optical system where the first evaluation on contrast is maximized differs from that where the second evaluation on contrast is maximized.

6. An autofocus system as defined in Claim 5 further comprising a signal mixing means which generates a third image signal by mixing the first and second image signals, and a third evaluation calculating means which calculates a third evaluation on contrast obtained by integrating high-frequency components of the third image signal in which the focusing means is provided with a function of adjusting the focus of the taking optical system on the basis of the third evaluation on contrast.

7. An autofocus system as defined in Claim 6 further comprising a brightness measuring means which measures the brightness of the third image signal in which the focusing means is arranged to adjust the focus of the taking optical system on the basis of the third evaluation on contrast when the brightness measured by the brightness measuring means is lower than a threshold value.

8. An autofocus system as defined in Claim 2 in which the focusing means adjusts the focus on the basis of the second evaluation on contrast when the second evaluation on contrast has only one peak whereas the first evaluation on contrast has a plurality of peaks.

9. An autofocus system as defined in Claim 8 further comprising a signal mixing means which generates a third image signal by mixing the first and second image signals, and a third evaluation calculating means which calculates a third evaluation on contrast obtained by integrating high-frequency components of the third image signal in which the focusing means is provided with a function of adjusting the focus of the taking optical system on the basis of the third evaluation on contrast.

10. An autofocus system as defined in Claim 9 further comprising a brightness measuring means which measures the brightness of the third image signal in which the focusing means is arranged to adjust the focus of the taking optical system on the basis of the third evaluation on contrast when the brightness measured by the brightness measuring means is lower than a threshold value.